



## **What happened near strong earthquakes in Japan**

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Deep structure of the active continental margins is a key to understanding of the tectonic processes especially seismicity and volcanism. Seismicity is set of earthquakes with different depths and magnitudes occurred in any region during any time interval. Events happened in strong irregular medium which deformed irregular external time dependence forces. How we can determinate interrelation between particular event and other events and stress field. Well known models which describes seismicity (Bar-ridge and Knopoff, Bott and Dean, Turcotte, Bak) could are combined in incorporating irregular of boundaries and its asperities, velocity and density variations and fluid pressure (as lubrication). Seismicity can describe on different space and temporal scales. Distributions of some parameters follows power law (Gutenberg-Richter relation, size of topography asperities, grain size in rocks at al.). Modern Japan islands arc is governed by interrelations between Eurasian, North American, Pacific, Okhotsk, Philippine Sea plates. Japan subduction zone is subdivided by transform faults - Central Hokkaido-Sakhalin and West Japan Sea. This region is one of most highly seismicity on the Earth: strong earthquakes are occurred last October-December. Deep structure under Japan arc has been investigated in detail during last two decades by seismic tomography method, deep sea drilling directly in subduction zone, GPS measurements and other modern tools. All results in this report are obtained by processing of earthquakes catalog JMA for 1991-1999. It was selected some regions in which strongest earthquakes occurred and then determinated events. It was investigated 3D hypocenters distribution with rotation of the images for definition of geometrical features, created Gutenberg-Richter diagrams, calculated space-time distances between nearest in time different parameters and variations for different time-window intervals before and after main earthquakes. Phase diagrams of space-time distances are attractors of developing of seismic weather. The analysis of a set of such diagrams showed that more strong earthquakes forces out from the attractor center. Attractor forms are retaining during long time after main shocks. The strong earthquakes (probably) does

not activate seismic regime immediately but initiate general process of tectonic movement.